



UOK532~1.ST25.txt  
SEQUENCE LISTING

RECEIVED  
AUG 26 2003  
TECH CENTER 1600/2900

<110> University of Kansas Center for Research  
Walter Reed Army Institute for Research

<120> METHODS FOR THE PRODUCTION OF PURIFIED INVASIN PROTEIN AND USE THEREOF

<130> UOK 5320.1

<140> US 09/830,036

<141> 2001-04-20

<150> PCT/US99/24931

<151> 1999-10-21

<160> 18

<170> PatentIn version 3.1

<210> 1

<211> 409

<212> PRT

<213> salmonella typhimurium

<400> 1

Met Leu Ile Ser Asn Val Gly Ile Asn Pro Ala Ala Tyr Leu Asn Asn  
1 5 10 15

His Ser Val Glu Asn Ser Ser Gln Thr Ala Ser Gln Ser Val Ser Ala  
20 25 30

Lys Asp Ile Leu Asn Ser Ile Gly Ile Ser Ser Ser Lys Val Ser Asp  
35 40 45

Leu Gly Leu Ser Pro Thr Leu Ser Ala Pro Ala Pro Gly Val Leu Thr  
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50

55

60

Gln Thr Pro Gly Thr Ile Thr Ser Ser Leu Lys Ala Ser Ile Gln Asn  
65 70 75 80

Thr Asp Met Asn Gln Asp Leu Asn Ala Leu Ala Asn Asn Val Thr Thr  
85 90 95

Lys Ala Asn Glu Val Val Gln Thr Gln Leu Arg Glu Gln Gln Ala Glu  
100 105 110

Val Gly Lys Phe Phe Asp Ile Ser Gly Met Ser Ser Ser Ala Val Ala  
115 120 125

Leu Leu Ala Ala Ala Asn Thr Leu Met Leu Thr Leu Asn Gln Ala Asp  
130 135 140

Ser Lys Leu Ser Gly Lys Leu Ser Leu Val Ser Phe Asp Ala Ala Lys  
145 150 155 160

Thr Thr Ala Ser Ser Met Met Arg Glu Gly Met Asn Ala Leu Ser Gly  
165 170 175

Ser Ile Ser Gln Ser Ala Leu Gln Leu Gly Ile Thr Gly Val Gly Ala  
180 185 190

Lys Leu Glu Tyr Lys Gly Leu Gln Asn Glu Arg Gly Ala Leu Lys His  
195 200 205

Asn Ala Ala Lys Ile Asp Lys Leu Thr Thr Glu Ser His Ser Ile Lys  
210 215 220

Asn Val Leu Asn Gly Gln Asn Ser Val Lys Leu Gly Ala Glu Gly Val  
225 230 235 240

Asp Ser Leu Lys Ser Leu Asn Ile Arg Lys Pro Val Pro Met Arg Arg  
245 250 255

Lys Ile Leu Met Met Arg Arg Leu Asn Leu Met Pro Glu Pro Ala Pro  
260 265 270

Arg Lys Val Trp Val Leu Lys Thr Val Ile Asn Lys Val Ser Leu Asn  
275 280 285

Ile Tyr Ile Leu Ser Lys Arg Leu Glu Ser Val Glu Ser Asp Ile Arg  
290 295 300

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Leu Glu Gln Asn Tyr Met Asp Ile Thr Arg Ile Asp Ser Ala Gln Asp  
305 310 315 320

Ala Asp Asp Gly Arg Ser Asp Tyr Glu Glu Leu Gly His Gly Arg Trp  
325 330 335

Tyr Cys Arg Gly Val Arg Ala Val Arg Arg Tyr Ser Gly Asn Val Ser  
340 345 350

Glu Gln Gln Ile Ser Gln Val Asn Asn Arg Val Ala Ser Thr Ala Ser  
355 360 365

Asp Glu Ala Arg Glu Ser Ser Arg Lys Ser Thr Ser Leu Ile Gln Glu  
370 375 380

Met Leu Lys Thr Met Glu Ser Ile Asn Gln Ser Lys Ala Ser Ala Leu  
385 390 395 400

Ala Ala Ile Ala Gly Asn Ile Arg Ala  
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<210> 2

<211> 382

<212> PRT

<213> shigella flexneri

<400> 2

Met Leu Gln Lys Gln Phe Cys Asn Lys Leu Leu Leu Asp Thr Asn Lys  
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Glu Asn Val Met Glu Ile Gln Asn Thr Lys Pro Thr Gln Thr Leu Tyr  
20 25 30

Thr Asp Ile Ser Thr Lys Gln Thr Gln Ser Ser Ser Glu Thr Gln Lys  
35 40 45

Ser Gln Asn Tyr Gln Gln Ile Ala Ala His Ile Pro Leu Asn Val Gly  
50 55 60

Lys Asn Pro Val Leu Thr Thr Thr Leu Asn Asp Asp Gln Leu Leu Lys  
65 70 75 80

Leu Ser Glu Gln Val Gln His Asp Ser Glu Ile Ile Ala Arg Leu Thr  
85 90 95

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Asp Lys Lys Met Lys Asp Leu Ser Glu Met Ser His Thr Leu Thr Pro  
100 105 110

Glu Asn Thr Leu Asp Ile Ser Ser Leu Ser Ser Asn Ala Val Ser Leu  
115 120 125

Ile Ile Ser Val Ala Val Leu Leu Ser Ala Leu Arg Thr Ala Glu Thr  
130 135 140

Lys Leu Gly Ser Gln Leu Ser Leu Ile Ala Phe Asp Ala Thr Lys Ser  
145 150 155 160

Ala Ala Glu Asn Ile Val Arg Gln Gly Leu Ala Ala Leu Ser Ser Ser  
165 170 175

Ile Thr Gly Ala Val Thr Gln Val Gly Ile Thr Gly Ile Gly Ala Lys  
180 185 190

Lys Thr His Ser Gly Ile Ser Asp Gln Lys Gly Ala Leu Arg Lys Asn  
195 200 205

Leu Ala Thr Ala Gln Ser Leu Glu Lys Glu Leu Ala Gly Ser Lys Leu  
210 215 220

Gly Leu Asn Lys Gln Ile Asp Thr Asn Ile Thr Ser Pro Gln Thr Asn  
225 230 235 240

Ser Ser Thr Lys Phe Leu Gly Lys Asn Lys Leu Ala Pro Asp Asn Ile  
245 250 255

Ser Leu Ser Thr Glu His Lys Thr Ser Leu Ser Ser Pro Asp Ile Ser  
260 265 270

Leu Gln Asp Lys Ile Asp Thr Gln Arg Arg Thr Tyr Glu Leu Asn Thr  
275 280 285

Leu Ser Ala Gln Gln Lys Gln Asn Ile Gly Arg Ala Thr Met Glu Thr  
290 295 300

Ser Ala Val Ala Gly Asn Ile Ser Thr Ser Gly Gly Arg Tyr Ala Ser  
305 310 315 320

Ala Leu Glu Glu Glu Glu Gln Leu Ile Ser Gln Ala Ser Ser Lys Gln  
325 330 335

Ala Glu Glu Ala Ser Gln Val Ser Lys Glu Ala Ser Gln Ala Thr Asn  
340 345 350

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Gln Leu Ile Gln Lys Leu Leu Asn Ile Ile Asp Ser Ile Asn Gln Ser  
355 360 365

Lys Asn Ser Ala Ala Ser Gln Ile Ala Gly Asn Ile Arg Ala  
370 375 380

<210> 3

<211> 4

<212> DNA

<213> Artificial sequence

<220>

<223> NdeI restriction site

<400> 3  
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4

<210> 4

<211> 29

<212> DNA

<213> Artificial sequence

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<223> PCR Primer

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<210> 5

<211> 30

<212> DNA

<213> Artificial sequence

<220>

<223> PCR Primer

<400> 5  
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<210> 6

<211> 27

<212> DNA

<213> Artificial Sequence

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<223> PCR Primer

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<211> 32

<212> DNA

<213> Artificial Sequence

<220>

<223> PCR Primer

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32

<210> 8

<211> 29

<212> DNA

<213> Artificial Sequence

<220>

<223> PCR Primer

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29

<210> 9

<211> 32

<212> DNA

<213> Artificial Sequence

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<223> PCR Primer

<400> 9  
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32

<210> 10

<211> 22

<212> DNA

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<220>

<223> PCR Primer

<400> 10  
gagacatatg ttgcaaaagc aa

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<210> 11

<211> 29

<212> DNA

<213> Artificial Sequence

<220>

<223> PCR Primer

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<210> 12

<211> 29

<212> DNA

<213> Artificial Sequence

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<223> PCR Primer

<400> 12  
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29

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<220>

<223> PCR Primer

<400> 13  
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30

<210> 14  
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<223> PCR Primer

<400> 14  
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27

<210> 15  
 <211> 31  
 <212> DNA  
 <213> Artificial Sequence

<220>

<223> PCR Primer

<400> 15  
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31

<210> 16  
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 <212> DNA  
 <213> Artificial Sequence



<220>

<223> PCR Primer

<400> 16  
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28

<210> 17

<211> 30

<212> DNA

<213> Artificial Sequence

<220>

<223> PCR Primer

<400> 17  
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<210> 18

<211> 373

<212> PRT

<213> shigella flexneri

<400> 18

Leu Leu Leu Asp Thr Asn Lys Glu Asn Val Met Glu Ile Gln Asn Thr  
1 5 10 15

Lys Pro Thr Gln Thr Leu Tyr Thr Asp Ile Ser Thr Lys Gln Thr Gln  
20 25 30

Ser Ser Ser Glu Thr Gln Lys Ser Gln Asn Tyr Gln Gln Ile Ala Ala  
35 40 45

His Ile Pro Leu Asn Val Gly Lys Asn Pro Val Leu Thr Thr Thr Leu  
50 55 60

Asn Asp Asp Gln Leu Leu Lys Leu Ser Glu Gln Val Gln His Asp Ser  
65 70 75 80

Glu Ile Ile Ala Arg Leu Thr Asp Lys Lys Met Lys Asp Leu Ser Glu  
85 90 95

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Met Ser His Thr Leu Thr Pro Glu Asn Thr Leu Asp Ile Ser Ser Leu  
100 105 110

Ser Ser Asn Ala Val Ser Leu Ile Ile Ser Val Ala Val Leu Leu Ser  
115 120 125

Ala Leu Arg Thr Ala Glu Thr Lys Leu Gly Ser Gln Leu Ser Leu Ile  
130 135 140

Ala Phe Asp Ala Thr Lys Ser Ala Ala Glu Asn Ile Val Arg Gln Gly  
145 150 155 160

Leu Ala Ala Leu Ser Ser Ser Ile Thr Gly Ala Val Thr Gln Val Gly  
165 170 175

Ile Thr Gly Ile Gly Ala Lys Lys Thr His Ser Gly Ile Ser Asp Gln  
180 185 190

Lys Gly Ala Leu Arg Lys Asn Leu Ala Thr Ala Gln Ser Leu Glu Lys  
195 200 205

Glu Leu Ala Gly Ser Lys Leu Gly Leu Asn Lys Gln Ile Asp Thr Asn  
210 215 220

Ile Thr Ser Pro Gln Thr Asn Ser Ser Thr Lys Phe Leu Gly Lys Asn  
225 230 235 240

Lys Leu Ala Pro Asp Asn Ile Ser Leu Ser Thr Glu His Lys Thr Ser  
245 250 255

Leu Ser Ser Pro Asp Ile Ser Leu Gln Asp Lys Ile Asp Thr Gln Arg  
260 265 270

Arg Thr Tyr Glu Leu Asn Thr Leu Ser Ala Gln Gln Lys Gln Asn Ile  
275 280 285

Gly Arg Ala Thr Met Glu Thr Ser Ala Val Ala Gly Asn Ile Ser Thr  
290 295 300

Ser Gly Gly Arg Tyr Ala Ser Ala Leu Glu Glu Glu Glu Gln Leu Ile  
305 310 315 320

Ser Gln Ala Ser Ser Lys Gln Ala Glu Glu Ala Ser Gln Val Ser Lys  
325 330 335

Glu Ala Ser Gln Ala Thr Asn Gln Leu Ile Gln Lys Leu Leu Asn Ile  
340 345 350

UOK532~1.ST25.txt

Ile Asp Ser Ile Asn Gln Ser Lys Asn Ser Ala Ala Ser Gln Ile Ala  
355 360 365

Gly Asn Ile Arg Ala  
370

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